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STATE OF COLORADO

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DUE DATE
ACTIONBill Owens, Governor
Douglas H. Benevento, Executive Director

Dedicated to protecting and improving the health and environment of the people of Colorado

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of Public Health
and Environment

July 24, 2003

Mr. Joe Legare
Assistant Manager for Environment and Stewardship
U.S. Department of Energy
Rocky Flats Field Office
10808 Highway 93, Unit A
Golden, Colorado 80403-8200

RE: ER RSOP for Routine Soil Remediation

Dear Legare:

Comments by the Colorado Department of Public Health and Environment, Hazardous Materials and Waste Management Division (CDPHE) on the modifications to the Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation are attached. If you have any questions regarding this correspondence please contact me at (303) 692-3367 or Carl Spreng at 303-692-3358.

Sincerely,

Steven H. Gunderson
RFCA Project Coordinatorcc: Norma Castaneda, DOE
Tim Rehder, EPA
Susan Chaki, CDPHE
Lane Butler, KH
Marla Broussard, KH
Mark Sattleberg, USF&W
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Administrative Records Building T130G



ADMIN RECORD

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Colorado Department of Public Health and Environment

Hazardous Materials & Waste Management Division

Comments on

Draft Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation

Modification 1

June 2003

1. Section 1.0 (page 1) and Section 3.0 (page 14)
If Pu, Na, and CCl₄ have been selected as examples of the three types of PCOCs, then "e.g." should preface each one. The Site should also explain why SVOCs have been deleted as PCOCs. Please note that Section 6.5.2, page 90, still refers to a potential consideration of SVOC concentrations when considering thermal desorption.
2. Section 1.0 (page 1)
The bullets describing the routine actions in this RSOP could be more clearly written. The following is suggested:
 - Excavation of contaminated soil according to the framework for conducting routine accelerated actions (Figures 6 and 7) and associated debris followed by offsite disposal with or without offsite treatment; and
 - Excavation of contaminated soil according to the framework for conducting routine accelerated actions (Figures 6 and 7) and associated debris followed by onsite thermal desorption treatment of VOC-contaminated soil with onsite backfilling or offsite disposal.
3. Section 1.4 (Page 5)
The qualifying phrase after "Subsurface Soil Risk Screen" should be "as applicable" rather than "to the extent possible."
4. Section 2.1 (page 8)
It might be useful to add at the end of the third paragraph that approval of these reports constitutes agency concurrence with a proposal of No Further Accelerated Action.
5. Section 2.2.3 (page 11)
Add "and provides an assessment of the data quality" to second sentence of first paragraph.
6. Section 4.1 (pages 28-31)
It is not clearly understood how this section interfaces with D&D activities since the D&D and ER integration activities are set forth in the Facility Disposition RSOP. The Facility Disposition RSOP is what is approved from a D&D/ER interface perspective and it is expected that it will be followed. It is therefore assumed that the ER RSOP does not specifically override actions identified in the Facility Disposition RSOP, but may be utilized to provide additional actions to be performed. Any issues that may arise should be discussed with the regulatory agencies and the final action agreed to by the LRA. Some of the discrepancies between the two documents are as follows:
 - A. The Facility Disposition RSOP identifies that facility structure and material are to be removed to below 3 feet of final grade, whereas the ER RSOP indicates that the facility

structure and material will be removed to 3 feet below existing grade. This should be changed to below 3 feet of existing or final grade whichever is deeper, or as otherwise agreed.

- B. The Facility Disposition RSOP states that the sanitary sewer lines, tanks, and equipment associated with facilities will be flushed and removed to the isolation valve of the main system line. This is being changed in the ER RSOP to "a location outside the building footprint". Since the isolation valve should be outside the building footprint it is unclear why this change is needed, unless some of the isolation valves are within building footprints. Please provide appropriate rationale for this proposed change.
- C. The Facility Disposition RSOP specifies that ER will be responsible for removing contaminated structures not removed by D&D. This is being removed from the ER RSOP. This should remain or be appropriately modified, or rationale for its removal provided.
- D. Second bullet on page 30 - If slab removal is delayed please provide the specific facility personnel that are responsible for the slab during the interim. Is this D&D responsibility or ER responsibility? Are they the "landlord organization" as previously identified?
- E. 3rd bullet on page 30 - Please provide the rationale for not including tunnel disposition in the PMPs. Please identify the RFCA decision documents in which the disposition decision will be identified.

7. Section 5.2 (page 48)

This section should explain why only the top 6 inches is considered for non-radiological contaminants (1st bullet), when generally VOCs are only collected below the top six inches? Based on the normal soil sampling procedures VOCs would rarely if ever be considered in this evaluation of contamination. As such, either VOCs should always be collected in the top 6 inches or the VOCs from the next interval included in this calculation. Or all of the contaminants should be considered for the top 3 feet, rather than the segregation as indicated.

8. Section 5.2 (page 48)

The third bullet and its 2 sub-bullets could be more clearly written. The following is suggested:

- When COC concentrations are below RFCA WRW ALs, but the frameworks for conducting routine accelerated action for contaminated soil (Figures 6 and 7) indicate action is necessary to protect surface water and/or ecological resources:
 - Protection of surface water will be based on an evaluation of whether the contaminated soil source could cause an exceedance of surface water standards in accordance with ALF Section 2. This evaluation will consider whether environmental pathways and sufficient quantity of COCs exist that could cause an exceedance. An evaluation may also consider the physical characteristics of COCs, the completeness of natural attenuation, and whether a groundwater intercept system does or will exist.
 - Protection of ecological resources will be based on an evaluation triggered by an exceedance of ecological ALs in Table 3 in ALF. This evaluation will include the considerations listed in Section 4.2.C of ALF.

9. Section 5.2.1 (page 51)

The third sentence of the first paragraph should reflect the more precise language in the second sentence of the fourth paragraph on page 107. The Division suggests that the third sentence be deleted and the following language be added preceding the current last sentence of the paragraph: "When soil removal is initiated below 3 feet through application of Table 4 criteria, removal will continue in lifts between 3 and 6 feet until activity levels less than 1 nCi/g are achieved." Such would provide a better sequence of discussion and avoid any implication that the entire interval must be excavated.

The discussion in the first paragraph fails to explain how the 2-foot thick subsurface sampling intervals will be used to provide data for calculating contamination levels for the 3- to 6-foot interval to compare with Table 4 trigger levels. The consultative process mentioned in ALF Section 5.3.C.5 in regards to subsurface radiological contamination should be mentioned here as well.

This section should reference the basis for these protocols – ALF Section 5.3. This section and Figure 6 go beyond ALF Section 5.3 and add protocols for contaminated soil deeper than 6 feet.

In the second paragraph, the basis for the “one more equivalent measure” concept is unclear. Since the stated purpose is to “eliminate the need for future stewardship actions”, these future actions should be clarified to help correctly apply this concept. Figure 6 applies this concept only to soils 3-6 feet deep.

10. Table 4 (page 51)

It is unclear why the volume extent limits with respect to 5 and 4 nCi/g were set at 31 and 37 respectively. Volume extent limits of 33 and 42 m³ would provide the proper interpolation between 25 and 50 m³.

11. Section 5.2.2 (page 51)

This existing text could be merged into Section 5.2.1. A new Section 5.2.2 could address non-radiologically contaminated soil and Figure 7.

12. Section 5.4 (page 54)

The reference to action levels in the first sentence of the last paragraph should be changed to, “March 21, 2000 RFCA ALs.” The word “proposed” should be removed from the second sentence.

The discussion of why removal of soil above the 2000 RFCA ALs was not considered an alternative seems unnecessary, especially since the WRW ALs are no longer proposed, but final.

Alternative 2 could be titled as simply as Alternative 3: “Removal of Soil Based on the Wildlife Refuge Worker Land Use Scenario” or “Removal of Soil Based on the ER RSOP Framework for Conducting Routine Accelerated Actions for Contaminated Soil.”

13. Section 5.4.1 (page 54)

The statement in the second sentence of this section could be read as overly presumptive. It would be more appropriate to state that monitoring would be used to detect exceedances of surface water standards.

14. Section 5.4.1 – Protectiveness (page 55)

In the fifth sentence, please change “public health” to “human health”, the term used in environmental regulations and guidance. Corresponding changes should be made in the *Protectiveness* sections on pages 60 and 63, the *Achieve Remedial Objectives* section on page 58, etc.

15. Section 5.4.2 (page 56)

The first sentence in the second paragraph should be modified. As written, the sentence implies that cleaning up to WRW ALs will also protect ecological receptors and surface water, which may not always be the case. It also implies that surface water standards need to be met only at POCs. The 6th paragraph under *Achieve Remedial Objectives* on page 58 conveys the proper intent. The third sentence in this paragraph is redundant with the first paragraph. The following revision of this section is suggested:

"Under this alternative, soil with contaminant concentrations greater than RFCA Attachment 5 WRW ALs (DOE et al. 2003) will be removed following the framework in Figures 6 and 7. This framework implements the Action Determinations required by RFCA Attachment 5, Sections 4.2 and 5.3 and calls for additional excavation beyond that required by RFCA WRW ALs if necessary to protect ecological resources and surface water.

Excavated soil will be shipped offsite for disposal with or without onsite or offsite treatment unless treatment reduces contamination to levels below RFCAA WRW Soil ALs, in which case the soil may be returned to the RFETS environment (see RFCA Attachment 5, Section 1.1, Put Back Levels). It is anticipated that thermal desorption will be used as the onsite treatment method. (see Section 6.5.2)."

16. Section 5.4.2 - Achieve Remedial Objectives (page 57)

WRW ALs do not necessarily protect ecological receptors. The first sentence of the first paragraph in this section should therefore be corrected:

"The first RAO would be achieved because the RFCA WRW and Ecological ALs are calculated to protect refuge workers and ecological receptors respectively."

17. Section 5.4.2 - Achieve Remedial Objectives (page 58)

The discussion of radiologically contaminated materials in this section exclusively mentions Pu and its action level and fails to acknowledge the Am-241 action level.

18. Section 5.4.3 (page 62)

The capital costs for the residential-based alternative is 100 times the WRW-based alternative because the removed soil volume is 100 times as much. However, the acreage involved is only 5 times as much, since the assumed thickness of contamination is apparently 6 inches for Alternative 2 and 10 feet for Alternative 3. Site characterization does not appear to support the implication that a 10-foot thick section of contaminated soil exists over a 580-acre area.

19. Section 5.4.5 and Table 5 (page 65 and 67-68)

The last sentence in this section implies that Alternative 2 had the highest ranking in the categories mentioned. Actually, Alternative 3 ranked higher and the deciding criterion was cost. In the Capital Cost category, the L, M, and H scores should not be tied to low, medium, or high costs, but rather to the ability to achieve the criteria. An "H" score should always be a positive in favor of the alternative. Therefore, the scores in the Capital Cost row should probably be reversed.

20. Section 5.5.1 - Surface Water Protection (page 70)

The first sentence in this section should be clarified, since remediation to WRW ALs does not ensure protection of surface water. The following is suggested:

"In accordance with the framework for conducting routine accelerated actions for contaminated soil (Figures 6 and 7), protection of surface water will be ensured through a separate evaluation step."

Since two bullets have been eliminated, the remaining bullet should be revised and become the last sentence of the first paragraph:

"Areas where soil is remediated to WRW ALs, or in accordance with the framework for conducting routine accelerated actions for contaminated soil (Figures 6 and 7) will be backfilled according to Section 6.11, stabilized, and revegetated. This will in order to prevent or reduce erosion of soil with residual contamination into surface water."

21. Section 5.5.1 - Surface Water Protection (page 71)

Where a pathway to surface water and a sufficient quantity of COC(s) exists, monitoring results from POE(s) and POC(s) are inadequate to determine if soil should be removed to protect surface water upstream of the POE/POCs. Proper consideration of pathway and source, "could affect the extent of the action" as stated in Section 5.5.1 on page 65. Modify the paragraph with the three bullets:

- "Where a pathway to surface water exists, either by overland flow or ground water transport, the following questions will be addressed:
- What are the most direct surface and subsurface pathways to surface water?
- Do characterization data indicate there are COCs in soil of sufficient quantity to impact surface water?
- Do monitoring results from points of evaluation (POEs) or POCs (Figure 10) indicate there are surface water impacts from the area under consideration?
- Is the IHSS Group in an area with high erosion potential, based on ALF Figure 1 (DOE et al. 2003)?
- Is there evidence of ground water contamination above RFCA action levels downgradient of the IHSS Group?"

22. Section 5.5 - Monitoring (page 71)

Modify 4th the bullet to ask, "Are additional monitoring stations or wells needed?"

23. Section 5.5.1 - Institutional Controls (page 74)

The 6th bullet will read more smoothly if "monitoring systems," is inserted between "covers," and "groundwater barriers and treatment cells". Monitoring systems could refer to cover, ground or surface water systems.

24. Section 5.6.1 (page 79-80)

The application of ALARA is not necessarily consistent with a "sharp concentration gradient or where a small volume" would eliminate residual contamination. A large volume of soil may need to be excavated to eliminate soils below a "sharply defined concentration" and would be inconsistent with the "Equivalent Measure" scenario under ALARA. This should be clarified.

25. Figure 12

Figure 7 is referenced in the 1st diamond under *Implementation* for DQO criteria. The new Figure 7 no longer describes DQO criteria.

Add a "No" to the right of the 2nd diamond under *Implementation* and replace the reference to "Tier I" with "ALs" or "WRW ALs" in the box below.

The reference to Figure 13 in the last box, to the right, under *Implementation* is no longer valid. The "Soil Disposition" figure has been deleted. The new Figure 13 shows the ER RSOP Work Planning Process Chart.

26. Figure 13

Please verify that a Criticality Safety Review, in far right box, is pertinent to the ER RSOP process.

27. Section 6.5.2 (page 90)

Modify the second sentence to make it consistent with Section 5.5.1: "Onsite backfilling of soil that has been treated through a thermal desorption process will be considered if the soil meets the criteria in the framework for conducting routine accelerated actions for contaminated soil (Figures 6 and 7)".

28. Section 6.9 (page 114)

In the third paragraph of this section the reference to Attachment 6 should be deleted since that attachment is proposed for deletion from RFCA and Attachment 5, particularly Sections 4.2 and 5.3, should be referenced. The term, "No Further Accelerated Action" (NFAA), is listed in the Glossary (page 176) and the concept should be explained here or at another appropriate place in the body of the ER RSOP.

29. Section 6.11.2 (page 117)

The consultative approach and case-by-case determination mentioned in the third bullet should also be applied to the criteria for put-back of soils in bullets 2 and 4 to ensure that ecological and surface water resources are also protected.

30. Section 6.13 (page 119)

Under the *Accelerated Action Activities* bullet, add sub-bullets:

- Subsurface Risk Screen,
- Data Quality Assessment, and
- References (to supporting documents filed in the Administrative Record).

Under *Post-Remediation Conditions*, add map of pipes and structures left below 3 feet.

31. Figure 20 (page 120)

Please verify that this figure has been revised to reflect schedule changes.

32. Table 13 (page 150)

Please revise the dates as necessary.

33. Section 12.1.1 (page 151)

The revised text mentions "grid samples" and appears to ignore the use of biased samples.

34. Section 15 (page 172)

This definition of action levels should also refer to ecological action levels and reference Table 3 of RFCA Attachment 5.

ERRATA/EDITORIAL:

Section 1.2 (page 3)

The reference for the quote from ALF should be "(DOE et al. 2003)".

Figure 1 (page 7)

It would be more practical if this flow chart and other figures were perforated at the top.

Section 2.2.1 (page 8) and Section 2.3 (page 12)

The ER RSOP probably does not need to reference itself in the first paragraph and first bullet respectively. If this reference is left, the date should be 2003 to reflect this modified version.

Section 5.2.2 (page 51)

The correct reference is, "ALF Section 5.3.C.5".

Section 5.5.1 - Institutional Controls (page 74) - Add an "n" to "know".

Page 57, last line - "Eliminated", rather than "removed", would avoid repetitiveness.